CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society Of America

VOL. VII JANUARY, 1936 No. 7

First known flower in the U. S. of *Caralluma candata*.
Photo by Mr. Boyd L. Sloane in Mr. Tissot's gardens.

CACTUS AND SUCCULENT JOURNAL

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VOL. VII JANUARY, 1936 No. 7

EDITORIAL

The response to the Christmas gift offer was most gratifying and expressed the loyalty of the Society members. Not only was this a help to the Editor, but he is especially glad to welcome so many new members to our ranks and we trust that the JOURNAL will be a source of helpful enjoyment. Several members did not state from whom the gift subscription was sent. Continued cooperation of this kind will result in renewed effort to carry out our many plans. One member suggested that a definite plea be made for the JOURNAL to be subsidized as is the usual method for carrying on a scientific work, but we have hoped for six years that our plans could be carried out without such an appeal; it is a fact that a book such as the "Stapelieae" by White and Sloane never could have been published without a large expenditure by the authors, but such is their contribution to succulent literature. With the ever increasing support of the members the JOURNAL will carry on and the amount of promotional work will be in proportion to the assistance received.

The many complimentary and appreciative letters regarding the Educational series demand the disclosure of the author. It is a pleasure to state that our own President Emeritus, Dr. Arthur D. Houghton, has contributed these valued pages. During these busy days Dr. Houghton is working on a plan to plant succulents on the California hillsides to lessen the fire hazard, but more will be told of this plan in a future JOURNAL. The membership of the Society join with the Editor in thanking our first Society President for this valued series and we hope that he will follow it with a series of discussions on the various genera.

The following is from the Detroit News office: "the magazine shows that you and the Society have begun to do a substantial educative work for the groping amateur who lives hundred of miles from the habitat of the cacti and the succulents, and who has no kindred spirit just around the corner to whom he may go for information and encouragement. Long may you continue to wave."

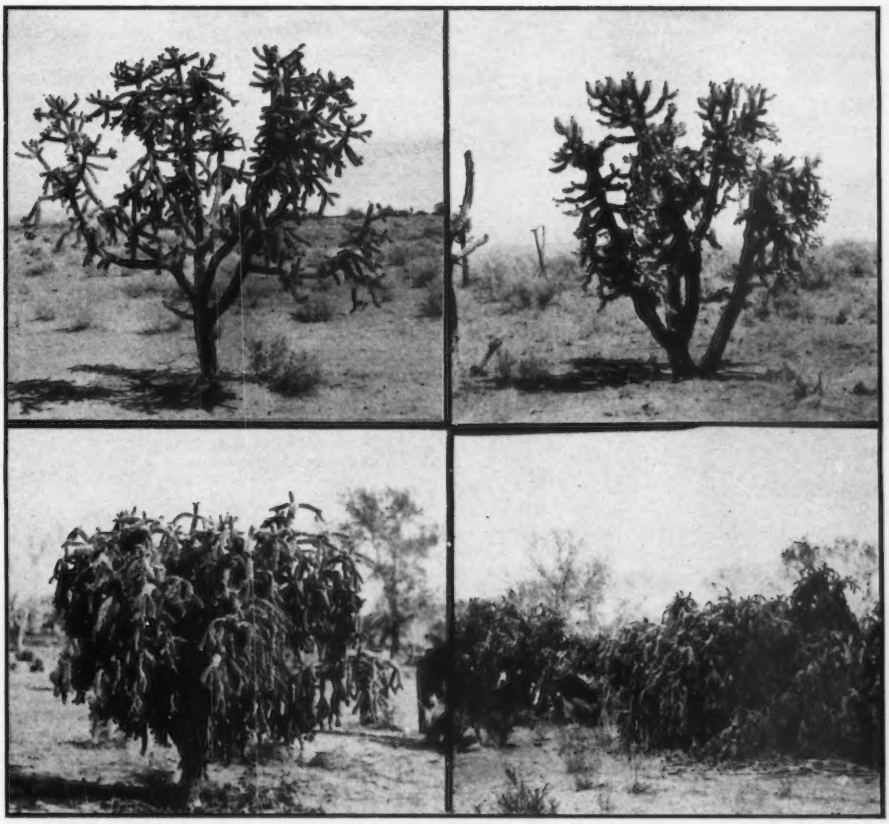
The many requests for the completion of "What Grows Where" will result in a continuation of that series.

Your Editor extracted the following from Dr. Poindexter's correspondence without permission, but this expresses a most valuable conclusion:

"There is no hope of bringing perfect order out of what looks like chaos for the reason that there is a serious discrepancy between the botanists' hypothesis that plants are separated into definite species and the actual fact that each plant is an individual and no two are exactly identical. The idea of a species is an artificial, human concept; convenient—even necessary to be sure, but since we have this variation from plant to plant it must always be a matter of someone's personal judgment as to where one species stops and another begins. One man's judgment is bound to differ more or less from another's and there is no final authority or count of appeal. Even should a congress of botanists meet and set up definite specifications, their work would be quickly invalidated by the discovery of new species and intermediate forms which is constantly taking place.

The only practical course for the collector seems to be to accept the names in widest use at the time, and not be too distressed if these must frequently be altered. While I'm heartily in favor of real effort to get accurate names on the part of collectors, I would rather see a good collection of handsome plants than an accurate collection of names with poor plants attached to them.

I agree with you that the cacti of Colorado are particularly variable and difficult to identify, perhaps because of the rapid changes in climatic conditions which may be found in closely adjacent sections of that state. Since Britton & Rose is the most comprehensive text we have available it is convenient to follow it unless subsequent work has made departure advisable."



ABOVE: *Opuntia spinosior* (left), *O. fulgida* (right). BELOW: the hybrid, *Opuntia spinosior* x *fulgida* (left), Group of the hybrid plants (right).

A NATURAL HYBRID IN THE GENUS OPUNTIA

By R. H. PEEBLES

Natural crossing occasionally is given as the explanation for peculiar specimens of plants not assignable to any described species. Perhaps in few instances are the plants so evidently of hybrid origin as the cactus we shall discuss. The evidence in support of natural crossing in this case seems sufficiently strong to justify its presentation without the long delay incident to establishing proof by growing artificial hybrids to maturity.

Extending for at least twelve miles along the bed of the meandering Gila River, near Sacaton, in Pinal County, Arizona, are numerous remarkably uniform individuals of an Opuntia. The plants were noticed in 1930 and close examination revealed that the form probably was a hybrid, the blending of the characters of *Opuntia spinosior* (Engelm.) Toumey and *O. fulgida* Engelm. suggesting that it represents the first or conjugate generation. The name may be written *Opuntia spinosior* x *fulgida*. Both of the assumed parental species are common in the region, in fact occur within the limits of the hybrid colony. Crossing between them is mentioned by Britton & Rose, who state that *O. fulgida* "appears to hybridize with *O. spinosior*."[1] The hybrid differs from both parents in having a denser crown, more numerous drooping branches and more strongly tuberculate joints. Profusely ramified specimens of *Opuntia fulgida*

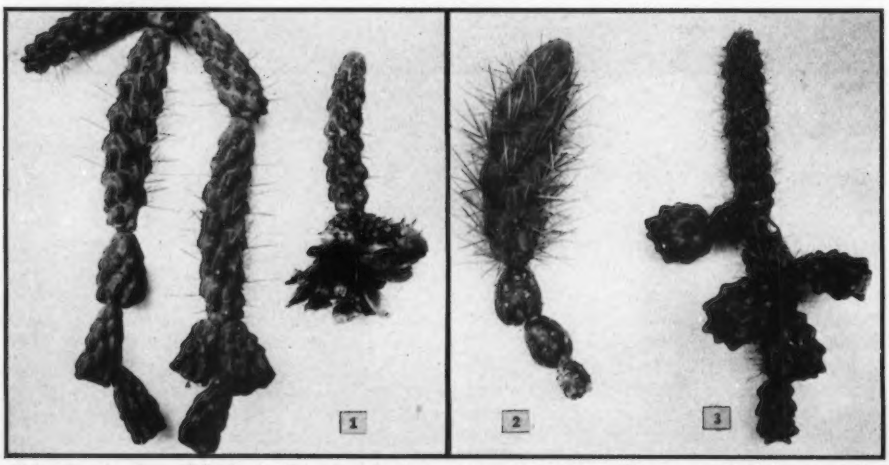
1. Britton, N. L., and Rose, J. N., "The Cactaceae," vol. 1, p. 68. 1919.

mammillata (Schott) Coulter might be mistaken for the hybrid on casual observation, but they are essentially different in all details.

The parental species are coexistent over a large area in southern Arizona, yet there does not seem to be evidence of frequent hybridization. The explanation for the large hybrid colony near Sacaton must be sought, not as the result of frequent crossing, but in vegetative reproduction from fallen joints rooting under favorable weather conditions. This method of reproduction is employed successfully, perhaps nearly exclusively, by the wide-spread *O. fulgida.* Beneath practically every hybrid were small rooted plants, to which joints from the old plant were attached. Flood waters and roving cattle easily account for the present known distribution, and further extension of range of a plant so readily disseminated by natural agencies is to be expected. Asexual reproduction accounts also for the high uniformity of the hybrid plants, which are practically sterile, in contrast to the great diversity of forms encountered in segregating populations.

The following table has been prepared for the purpose of facilitating comparison of some of the characters of the hybrid with those of its assumed parents:

CHARACTER	*Opuntia spinosior*	Opuntia hybrid	*Opuntia fulgida*
HABIT	Open, branches few-jointed, in whorls, rarely drooping to any extent.	Densely ramified, the branches many-jointed, many of them drooping.	Open or somewhat densely ramified, the branches several —to many—jointed, some of them drooping.
JOINTS	1.5-2.5 cm. thick, moderately tuberculate.	2-3 cm. thick, very strongly tuberculate, dark green.	3-5 cm. thick, strongly tuberculate with large tubercles, light green.
SPINES	6-12, 1.0-1.5 cm. long, brown or sometimes gray.	2-7, 1.5-3.0 cm. long, pale reddish-brown.	2-12, 2.5-3.5 cm. long, straw color or sometimes brownish.
FLOWERS	Deep purple (in form near Sacaton).	Purple ("Tyrian Pink").	Light rose.
FRUITS	Solitary, strongly tuberculate, truncate, deeply umbilicate.	Solitary or sparingly proliferous in chains of 2-5, strongly tuberculate, truncate, deeply umbilicate, green or yellowish-green in age, nearly seedless (about 1 seed in 20 fruits).	Abundantly proliferous, smooth, rounded, shallowly if at all umbilicate, pale green, often seedless.



1. *Opuntia spinosior* x *fulgida.* 2. *Opuntia fulgida.* 3. *Opuntia spinosior.* The lowest fruit is attached to a hidden joint. (All are quarter size).

Several aberrant individuals of the same relationship were found in the colony. They perhaps derived from the hybrid, which is almost, but not quite seedless. However, the number of these individuals in proportion to the entire hybrid population was negligible.

The writer has considered describing the hybrid as a new species and there are perhaps suf-

ficient reasons for so treating it. The known range, about twenty-five square miles, probably would be extended if the Gila River course were explored westward, and the individuals are more uniform than in many recognized species of the genus. There is little doubt that we have here the unusual opportunity of recognizing a nascent species.

BLANC'S CATALOGUE

(NOTE: *All nomenclature in this article is as found in "Hints on Cacti."*

The photograph in the April JOURNAL of an advertisement of A. Blanc & Co. in the March, 1889, Century Illustrated Monthly inspired me to read for about the one hundredth time my Blanc Catalogue and to again find delight in its "Cacti," "Cactuses," "Cactae" and "Cereuses."

Each time I read it I must feel very sympathetic with Mr. A. Blanc and the disappointments which must have fallen to his lot if he really began the growing of cacti, as he says, "knowing that excessive watering was the only thing that would kill a cactus." His most venturesome step—"a daring one indeed"—and which earned for him the coveted title "Cactus Crank" was to unroof a building and build a cactus greenhouse on the fifth floor. All this description is accompanied by illustrations of his "daring" showing second, fourth and fifth story greenhouses. Here he could maintain, he states, a 50 degree temperature at night but on July days the temperature went to 90 degrees, to 100 degrees and more, "but it did the plants good and us no harm. It is said sun-baths are healthy and we believe it." A wise man once said that there is nothing new under the sun but modern sun-bathers little think, I am sure, that a Cactus Crank discovered the fad in a fifth story cactus greenhouse. It was a success as witness the author's exclamation, "How the Cereuses did grow!"

Present day cactus dealers might take a hint from Blanc in the preparation of their catalogues because his "Hints" caused a craze with some of his customers; so enthusiastic were they that the accumulation of a collection became "a real passion, almost impossible to control." I can understand that. In one instance a customer's wife entered the complaint that her husband starved himself and his family in order to buy cacti, and when Blanc offered to give the man all he wanted free of charge he promptly "neglected his business to experiment in grafting and propagating." It is interesting to note that even at this early date the superstition was already abroad that a stolen Cactus grows much better than one that is purchased. Too bad there are no dealers near my home!

I have also been quite sympathetic with Blanc's account of "a certain Baltimore Reverend" who bought all the "sick and crippled" cacti he could and restored them to health and so, with little outlay, built an enviable collection. I happen to be a Reverend with a purse out of sympathy with my desire to adopt so many children from the Cactus Family and I shall never forget my delight in recently being turned loose in a collection of Cacti suffering and dying from scale, mealy bug, frost bite and neglect. All this not-withstanding the premise that only excess water kills them. His catalogue lacking the now familiar "Terms: Cash with order," it was inevitable that Blanc should come to know the man "who buys them, sends a letter of thanks, and forgets (?) to pay for them." Perhaps the most outstanding of all Blanc's customers was a nine years old little girl who succeeded in raising a fine collection of plants from cuttings and seeds. Perhaps not so uncommon today in the family of a cactophile (I seem to hear one or two saying "my little girl can equal that") but surely astounding beside Blanc's confession on a later page of his "Hints"—"We might as well say that we scarcely ever think of raising a Cactus from seed—the task is too tedious."

Among Blanc's prides was the naming of the pink night-blooming *Cereus childsi* (see Vol. IV, No. 11 of the JOURNAL) and the introduction of *Echinocereus candicans*. How much has been done since Blanc's day in the discovery of the cacti native to these United States may be realized from his assurance that scarcely more than 50 varieties can be found within our borders. Nor are the cactus collector's difficulties entirely a thing of the present day. He tells of having sent a collector over 200 miles with team and wagon to get a certain rare Pilocereus. Head cuttings were taken, placed in canvas bags and loaded on the wagon only to find, when the destination was reached, that the jarring and jolting had caused every one to decay. Of another hardship he says: "One of our Utah collectors has to travel 600 miles by wagon in order to obtain 3 of the 9 varieties indigenous to that state."

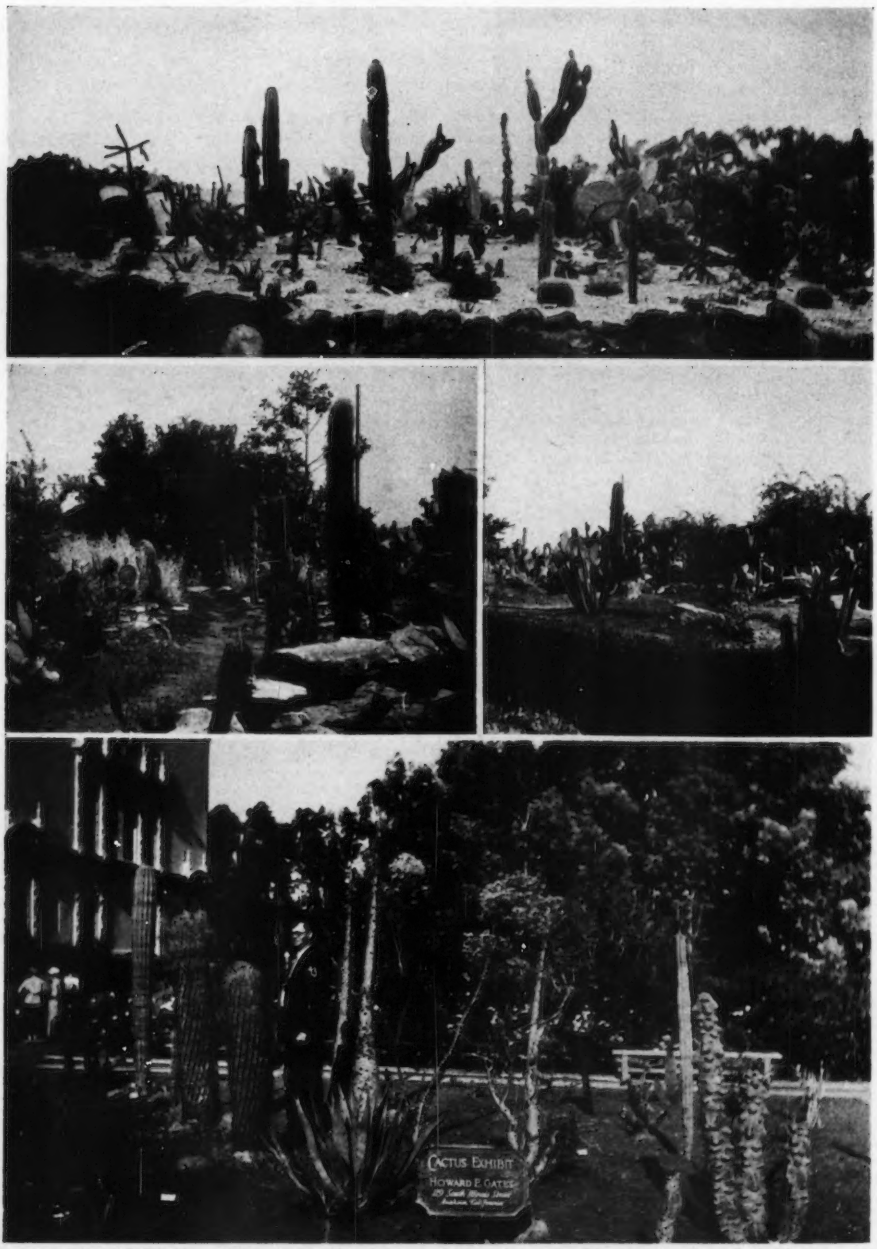
Present day catalogue makers have nothing on Blanc in the matter of painting word pictures. He advocates the use of *Cereus giganteus* in place of palms because they need no syringing or cleaning and can safely be left unwatered for six months at a time; he likens a bed of *Opuntia rafinesque* in bloom to a bed of golden tulips, describes *Mammillaria micromeris* as a silk embroidered button and makes it a foil for those members of the Cactus Family usually described as a "horrid thing with sharp spines" by saying that it is quite safe for babies to play with it; he laments that the flowers of *Cereus giganteus* are not proportionate to its size. Lists of the best blooming, showiest and most curious are given with instructions how monstrosities may be caused, even being so unwise as to advocate the grafting of Stapelias, Mesembryanthemum and Echeveria on Cacti, and almost outdoes the "Fantastic Clan" in his list of common names.

Indeed his enthusiasm outpaints one's fondest dreams in word descriptions and wonderful wood cuts until one comes to *Echinocactus sileri*. "Stock exhausted" is all one finds. How complete one more wood cut could have made Blanc's "Hints on Cacti!"

ROBERT H. WALKER,
Berwyn, Pa., Oct., 1935.

Our fellow member, Ferdinand Schmoll of Mexico won the first prize, a blue ribbon and a silver cup for his cacti and the other succulents exhibited at the Annual Agricultural Show in Mexico City.

F. E. Cooper of England tells his method of removing seeds from fleshy fruit: "I cut open the pods with a knife and spread the pulp on clean sheets of blotting paper in the same manner that you spread butter on bread. If spread thinly the pulp is soon absorbed by the blotting paper and next day the seeds may be brushed off with your finger. I use this method with all seed pods both large and small and it saves hours of messy work."



ABOVE: Helen McCabe's exhibit at San Diego Exposition. CENTER: Two views of Mrs. Bakker's gardens (Knickerbocker Nursery) San Diego. BELOW: Howard Gates (our new President) with his Mexican plants in San Diego; the larger plants are *Idria columnaris, Pachycereus pringlei, Ferocactus gracilis, Lophocereus schottii monstrosus* and *Agave brandegeeii*. The International Exposition at San Diego, Calif., made the following awards to Succulent Exhibitors: 1st. Cactus Clubs of Arizona. 2nd. McCabe's Cactus Farm (Mrs. Helen McCabe). 3rd. Soledad Gardens (Faye and Lewis Walmsley). 4th. Desert Nursery, Palm Springs. 5th. Gates Famous Cactus Garden (Howard E. Gates). 6th. Nickerbocker Nursery (Mrs. Neff Bakkers).

Aloe bainesii, 36 feet high growing in South Africa.

Notes on Aloe

By J. M. Van Den Houten

Translation from the Belgium Cactus Bulletin by G. Van De Weghe.

The greatest number of Aloes are of South African origin, although some may be found as far as Arabia. In recent years, more interest has been taken in this kind of plants in South Africa, and this is no wonder, as Aloe is the national plant of South Africa, just as the cactus is the national plant of Mexico.

Under the energetic management of Mr. van Balen, a wonderful collection of Aloes has been planted in the gardens around the Union Buildings at Pretoria and the same can be said of the gardens of Capetown and Stellenbosch, as well as of many private gardens. After all, this is quite natural, where should Aloe grow better than in their own native country, under the fine clime of the South African Union.

Scientific interest in Aloe was first taken in Holland and England where one can still find species that have never been found again in nature. How is this possible? Well, the first colonists who went to South Africa did not bother much about the wild flora; where new land was to be created, they simply destroyed all and everything that stood in the way and it is quite possible that rare species have been lost forever.

However, it has also been experienced, that the early descriptions of certain species were far from being correct and it is quite possible that old-known species have been rediscovered without any possibility of identification. Take, for example, *Aloe soccotrina,* which was already reproduced in 1697, in a precious book "Hortus Medici" of Commelin, a professor at Amsterdam. For many years it was impossible to find this plant again, although it was nearly certain that its habitat was very near Capetown. The honour of the rediscovery belongs to Dr. Marloth († 1931) who, in 1905, found the plant on the slopes of the "Tafelberg." This species, like

many others, occupies a very limited area and besides the Tafelberg, it is only found on the rocks of the Little Lions Head near Houtbaai. This example will be sufficient to show that, when the whole of South Africa will be thoroughly explored, we may expect surprising discoveries in the matter of Aloes.

It is wonderful that certain species have very limited areas of distribution, some being limited to one hilltop, whilst others spread over very large areas. This is also the case with many other plant families which have a great number of species and the fact is perhaps in relation to the manner upon which new species are born in nature. The difficulties become still greater through the fact that Aloes hybridize very easily. In South Europe, where Aloes grow as easily as in their native country, a great number of hybrids have been realized. In the botanic garden at Palermo, many new species have been created amongst which we find the beautiful *A. paxii*. *Aloe variegata* spreads over a very wide area.

The South African Union counts about 130 species, the total known species not being over 200.

Aloe can be divided into 4 groups:

1. The treelike species growing to an height of 12 m. (*Aloe Bainesii, dichotoma*).
2. The shrubby species with erect stems. (*Aloe marlothii, ferox*).
3. The smaller species which have nearly no stem and are rather creeping: *A. arborescens*.
4. The small species without stem, amongst which we find the most interesting species for collectors. (*A. humilis, aristata, ausana, variegata*).

Editor's Note: Our sister Society in Belgium is now publishing its fifth volume of the CACTUS BULLETIN and Mr. G. Van De Weghe will be glad to send a sample copy. $1.20 per year. Address 1 Rue du Tennis, Gendgrugge, Belgium.

Mr. T. F. Martin of Mammoth Cave, Kentucky, states: "I am very much interested in securing good clear photographs of the following cacti in their natural surroundings. Can you inform me or direct someone who may inform me as to the possibility of securing these photographs and the probable price of same?

Opuntia imbricata, spinosior, whipplei, davisii, arenaria, phaecantha. Echinocereus polycanthus, pauci-spinus, octacanthus,, fendleri. Neomammilaria vivapara, missouriensis. Schlerocactus whipplei. Pendiocactus simpsoni."

Miss Frances H. Cramer of the Long Beach Society sent in the following quotation from "California Agriculture Extension Service—Circular 87, Insects and other pests attacking Agriculture Crops."

Mealybugs—pseudococcus spp.

Mealybugs, like many other scale insects and like aphids excrete quantities of honey dew, which cover the infested platns like a thin coating of syrup. In cool and temperate areas, such as the coastal region of this state, a black-smut fungus grows on the honey dew, which is responsible for the dirty smutty appearance of plants infested with these insects."

FOR SCIENCE

Midnight! The normally peaceful city of Pasadena was clothed in slumber. One of the fiercest winds in years had cleared the streets of even the last few stragglers. Nothing was abroad but the elements, howling and swirling through the streets and lanes, breaking and tearing sturdy palms and lordly eucalyptus trees.

On a street near the foothills all of the houses are darkened. The occupants are deep in slumber, resting until the storm shall have spent its fury by morning light. In one of the homes a telephone rings fretfully! It is a call from Riverside, fifty miles away on the edge of the desert. Urgent tones betray the caller's anxiety. Could he come? Perhaps he would be too late!

It was only a matter of minutes until the automobile was faced eastward, headed toward the desert and the thickening dust clouds. Past the foothills he raced toward the blinding sand swept ribbon of road through the vineyards. Eyes ached with the effort to see through the dust, at times completely obscuring his course. Now the wind veers. Directly into its path he must go.

Fallen trees and debris are a constant menace. The storm rises to hurricane proportions and soon the sandy desert land on both sides of the roadway merges the roar of the wind and sand striking the sides of the car like multiple sharp knives. Jogging on slowly, he felt rather than saw that the car was off the road. Groping about he found the road where his car had gone off at a turn. He backed his car onto the narrow strip of concrete deep in sand, but again and again he found himself off the highway.

Hours seemed to be dwindling. Time was all that mattered and he choked with impatience at his inability to progress. He was almost certain to be too late. Then suddenly the wind abated and the car raced ahead as if it understood its mission.

It was three o'clock when the lights of Riverside were seen and five minutes later the car stopped before a rambling white house, which alone was lighted as if to serve as a beacon for our weary wayfarer. The dweller must have been waiting at a window for him. In a second he was at the curb greeting him.

"Am I too late?"

"No! But hurry."

A small black case was quickly procured from the back of the car and together the two men rushed up the steps of the house and back towards the dark sunroom. It was the work of seconds until the little black box was thrown aside and its paraphernelia quickly adjusted and set in readiness to be used.

Smiles of grateful satisfaction beamed on the countenances of the two men as flashlight in hand they gazed down on the slowly curling edges of the wierd starlike flower of *Caralluma candata*—the first time it had ever flowered in America. In a half hour it would be closed, perhaps not to flower again.

The picture was soon taken and Mr. Sloane thanked his host, Mr. Tissot, for his contribution to science and departed into the howling night with a sense of happy achievement.

C. E.

The following 8 pages are the 12th installment of the Britton and Rose reprint of Vol. II THE CACTACEAE through the courtesy of Carnegie Institute.

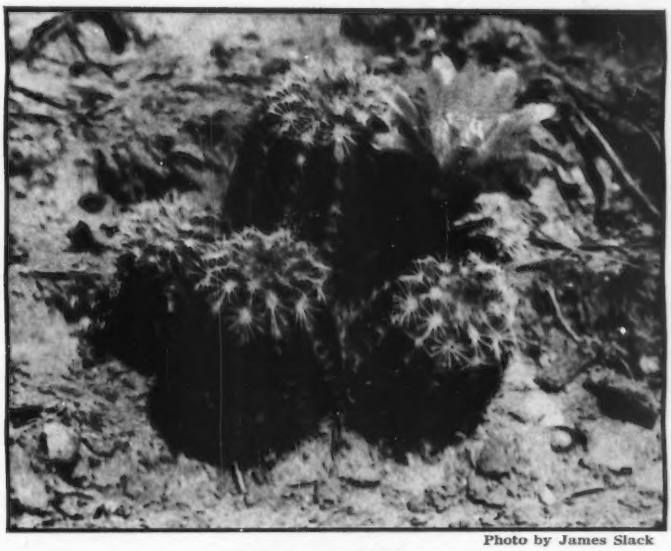


Photo by James Slack

Echinocereus viridiflorus

Notes on Oklahoma Cacti

By MARION SHERWOOD LAHMAN

V. ECHINOCEREUS VIRIDIFLORUS

In that extreme northwestern corner of Oklahoma called Cimarron County, where the land surface has climbed, imperceptibly, to forty-five hundred feet; where fantastically carved upthrusts of sandstone are forerunners of the magnificently sculptured cliffs of northeastern New Mexico, plant life has changed to match the environment. Cane cactus, yucca, cat-claw, mesquite and sage-brush are the most prominent plant features in that semi-arid region. It was there between the foot of the Black Mesa and the dry bed of Carizzo Creek, that we found *Echinocereus viridiflorus*. One plant was big for its kind, nearly two inches high, and it was, on that May day, covered with half a dozen light green flowers which made the plant itself look like a mere handle to an old-fashioned nosegay. Perhaps to make up for its lack of size, our least of cacti had reversed the usual color scheme. As if apple-green were not innovation enough for a cactus flower, the longer spines were tipped with ruby-red. And these plants which had skipped over the border from New Mexico into this lower altitude, had more and longer spines than those growing high up in the Las Vegas mountains, not so far from the "prairies on Wolf Creek, North Mexico," where Wislizenus found the type plant in 1846. "North Mexico" is called New Mexico now. When Wislizenus made his tour, the war with Mexico was begun but not ended, and the United States did not yet have title to our neighbor on the west.

A couple of years later, Dr. Engelmann named the little cactus with the red and white spines and green flowers. He invented a new name for the genus also. So the green-flowered hedgehog cactus, to use its common name, was labelled "Echinocereus" instead of the former "Cereus," and was further distinguished by "viridiflorus."

"What is in a name?" The lovelorn Juliet was no botanist or she never would have asked such a question. "Viridiflorus" or green-flowered is obvious. "Cereus" is Latin for wax candle and was early given to certain cacti with candlelike stems, including those then known of the fifty or more species now named *Echinocereus*. "E-chi-no" equals hedge hog. Thus, the entire translation reads: green-flowered hedgehog wax candle—a terrible combination to force upon a defenseless little cactus. The candle part is reminiscent of "velas de coyote" (coyote candles) used by Mexicans for the cane cactus. Locally, in California, hedge hog cacti is the com-

mon name instead of torch cacti.

You may read in the Flora of New Mexico that the *Echinocereus viridiflorus* plants found in the southern part of the state, the Organ Mountains particularly, are taller than the northern ones. These were declared a subspecies, "cylindricus," by Engelmann, and "ubulosus," by Coulter. But later authorities consider them merely larger growth forms.

A tiny cone of green, red and white, the colors of the Mexican flag, was brought from an eight thousand foot ridge in northern New Mexico and planted in my Tulsa garden. From the size of a thimble, it grew slowly until at the end of five years it had seven stems, the largest three inches high. Given time, it may reach the ultimate eight inches mentioned in the Report. In the meanwhile, two older specimens from Oklahoma, each a solitary stem an inch and a half high, have apparently reached their size limit.

PLANTS AND FEDERAL FUMIGATION

How often have we heard this remark—"Do not ship your plants through El Paso (Nogales, New York, etc.) as Federal Fumigation will ruin them."

Living on the Mexican—United States Border, I can readily attest to the good treatment given to our plants by the Federal Agriculture employees and why any one should wish to smuggle plants to avoid Agriculture Inspection and Fumigation is beyond me. This service is free to all persons importing plants from foreign countries and serves not only to protect imported plants, but also the community in which you live from injurious insects and plant diseases that might be introduced with your shipment.

I, as a custom broker, have handled many shipments, that I as a Cactus and Succulent novice would be sorely tempted to burn if it were not for the fumigation service. Actually I have seen root aphis in solid masses covering the roots of imported cactus. I have seen mealy bug masses where some of these insects would be three-quarters the size of the nail of your small finger, and scale that could be peeled off like bark.

Please do not get the idea that all shipments are fumigated for we handle many clean shipments that Agriculture Inspection does not hold for fumigation.

The formulae for Government Fumigation is not a hit or miss proposition, it is the result of experiments conducted over a long period of time. Thus each plant has its particular formula and time for fumigation. In the majority of the cases here, the plants are placed in an air-tight cylinder and the air removed to the extent of from 12 to 15 inches of vacuum. From 15 to 16 cubic centimeters of liquid gas is then permitted to be sucked into the cylinder. At the end of sixty minutes atmospheric pressure is restored and the plants removed. The fumigation takes place in a vacuum in order that the gas thoroughly permeates the plant—I say gas, for the liquid is almost immediately vaporized upon entering the drum.

*The gas is similar to that used for the execu*tion of some of our criminals, so its lethal effects can readily be imagined. What better insurance for the elimination of insect pests from your collection could be desired.

Fumigation probably does the plant itself no good, but a strong healthy plant should not suffer particularly from the dosage mentioned above.

Federal Agriculture Inspection and Fumigation is not just needless redtape, but is the cooperation on the part of our Government for your own protection as well as that of the community in which you live for the entrance and spreading of plant infections.

J. W. MANSON, *Nogales, Ariz.*

EARLY DAYS

By L. P. EDLEFSEN

It was in 1872 when I found myself working in Davenport, Iowa, at Westphal's Nursery and there it was that I first got interested in cactus. Mr. Westphal's father had brought quite a large collection of cacti and succulents 25 years previous from Europe and it was a revelation to me, as I had always a love for the curious in plant life. We brought a century plant in bloom that year and people came as far as Chicago to see it. California was a long way off in those days. However, there were a number of people that had good collections in Davenport at that time. But as far as names were concerned, all we had were handbooks from the old country.

I remember we had a fine specimen of *Euphorbia caput-medusae* to which I took a great fancy, but I never ran across another one until I came to Los Angeles. The next year I was in Des Moine having charge of the greenhouses of the then richest man in Iowa. (There I found a number of collectors just crazy about cactus.) But wanderlust was in my blood, I never did want to work for anybody else, so I went to good old St. Louis and started in business for myself. It was there in 1876 that I bought a cutting of *Cereus peruvianus monstrosus* from which I propagated quite a number in the course of time and eventually brought them to Los Angeles. They were scarce then and I gave a number away to collectors.

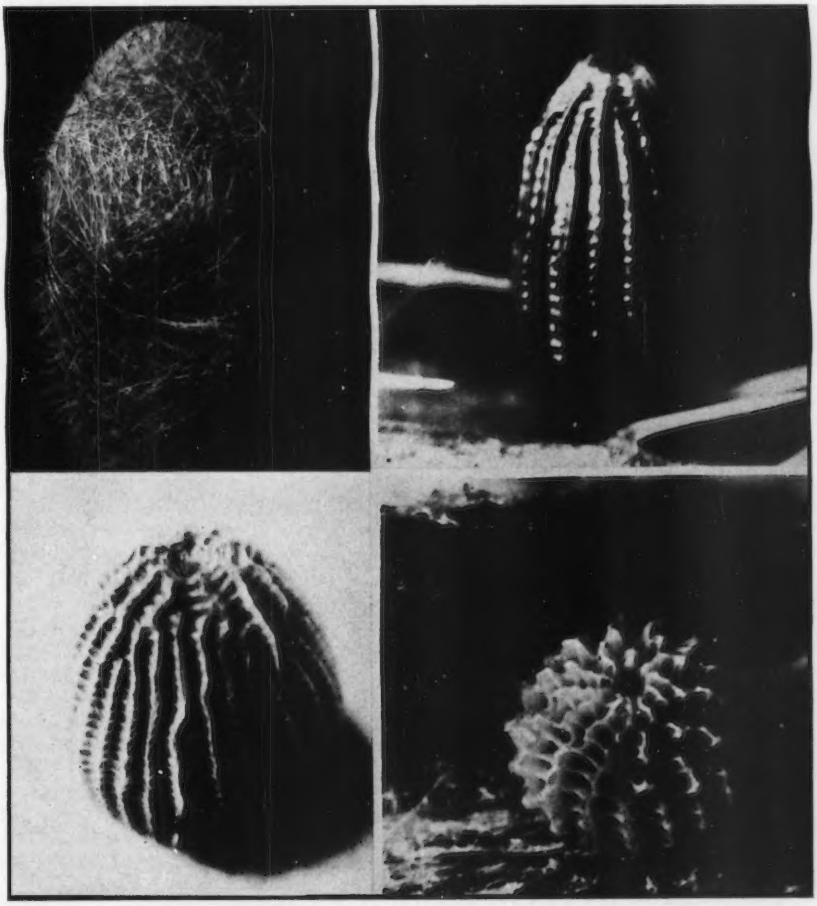
In St. Louis cactus were hard to get. A friend gave me some she had raised from seed picked from rice. Nobody had made a specialty of growing and selling cactus until some years later when Mr. Blanc in Philadelphia published his catalogue of cactus. Well, I was married and my dear wife could not stand the climate, we sold everything and settled for 11 years in St. Paul, and became one of the pioneer florists there. But my cactus had to go along. In 1884 we had an agricultural exhibit in the Market Hall and I

showed my little collection. It happened there was a *Stapelia* and an *Echinopsis* in bloom. Well, from the first to the last day there was always a crowd around the cactus stand. It seemed the people had never seen anything like it. My *Dasylirion* took the prize as best single specimen. One day Sitting Bull and his ten wives came to see the exhibition. We put them on the stage and fed them watermelons, it was the first time they had seen melons and the faces they made were enough to make a monkey laugh. They were on their way to Washington to see the "white father."

In '91 we moved to Los Angeles. In three weeks I had bought a place of 6 acres, hillside, for $400 and was growing plants. I intended to go in the florist business, but soon found that there was no demand for cut-flowers; there were only three florist stores in the city, two on Spring Street and one on East First Street. So I opened a nursery and plant stand on Main Street, on a lot next to where now the Farmer & Merchants Bank stands. The Postoffice was then on Main and Winston Street.

My friends, Lyon and Cob, were then in the nursery and export cactus business. They had quite a large place in Edendale. Mr. Ernest Braunton was their manager, but times in the 90's were worse than they have been the last few years and they had to sell.

There were a great many collectors at that time, I should judge more than 100. Beside Lyon and Cob, my friend, George Leaver, and I were the only ones that sold cactus, as far as I remember. Then there was also Mrs. Patterson in Glendale, who sold cactus. For a while Mr. E. Braunton published a journal, "The Cultivator," partly devoted to cactus. It was very good, but times were too hard, and it did not pay. I feel sure the present Journal will not have the same fate, due to the world-wide interest and the other fine books on the subject. My best wishes for its success.



Can you name these rare cacti which were discovered and photographed by H. Mm. Menke? There might be a clue by referring to page 62 of the Britton and Rose section in the Nov. Journal. G. A. Frick claims that he has the two Euphorbias while Wright Pierce and Fred Benedict both claim the Echinofossulocactus.

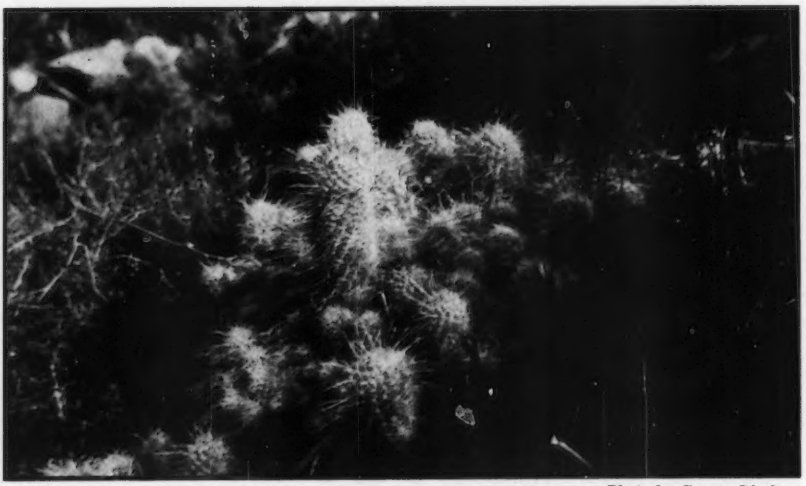


Photo by George Lindsay

Cochemia setispina taken at the type locality, Mission San Borjas near Punta Prieta, Lower California, Mexico.

Cochemia setispina

By GEORGE LINDSAY, Lakeside, Calif.

While collecting in Lower California this spring, I decided to attempt to locate that very elusive plant, *Cochemia setispina.*

The type locality for the plant was listed as "San Borgia, in Central Lower California." Finding no place bearing this name on my maps, I took the advice of a veteran Lower California collector to try Mission San Borjas. This mission is located far back in the Sierra San Borjas, near the tiny cluster of adobe huts called Punta Prieta.

Upon arriving at Punta Prieta, I soon found a man who knew the little used trail to the mission. He was surprised to learn I wished to go there, as it is very seldom visited. I was later to learn I was the first American to visit the mission in over twenty years! The Mexican was willing to guide me, and early next morning we headed our pack train into the barren San Borjas mountains.

The next two days were occupied in slowly winding our way deeper into the mountains. Dry camps were necessary, as there were no waterholes in the entire fifty miles. The gait of a burro is painfully slow, and the journey seemed long, as conversation was impossible—my high school Spanish, when put to the test, proved frightfully inadequate. In the evening of the second day, however, we arrived at the beautiful old stone mission.

Upon arriving at the mission, I was told by the few Indians living there, that they had seen no plant meeting the description of *Cochemia setispina.* The Indians were much more interested in watching me than in attempting to locate my plant; I was the first white person many of them had ever seen. They were expecially interested in my flash-light, and the zipper on my sleeping bag also intrigued them. I was becoming rather discouraged, and was about to give up the search when a boy told me he had noticed a strange "chollita" in a near-by canyon. He took me to the place, and lo, there grew a beautiful clump of *Cochemia setispina,* nearly six feet in diameter.

The plant is very attractive, growing twelve to fourteen inches high, and covered with bristly spines, tipped in brown. It was not strange that the Indians had not noticed the plant, for in one day's search, I found not over a dozen specimens. In all the plants the heads were from one and a half to two and a half inches in diameter.

All of the plants I saw were in clumps of from

five to several hundred heads. The thrill of the first sight of the plant was compensation enough for the five days and one hundred miles on burro-back, for broken springs, a five-day wait in Rosario for gasoline, and the week's driving over indescribably bad roads to Punta Prieta.

The next day I spent in collecting and photographing near the mission. The mesas were covered with *Machaerocereus gummosus, Myrtillocactus cochal, Lophocereus schotti, Pachycereus pringlei, Agave nelsonii, Pedilanthus macrocarpus,* several types of *Ferocactus,* forests of the elephant-wood tree (*Pachycornis discolor*), *Lemaireocereus thurberi, Idria columnaris,* and many species of *Opuntia, Agave,* and *Dudleya.* Truly a paradise for one affected with cactitis.

I also found a beautiful little white, hook-spined, and pink flowering *Neomammillaria.* It grows in sandy washes and is seldom over three inches high. It may turn out to be the same as a little plant discovered by Mr. Gates in 1934, and known as his No. 521. I also found a strange little *Echinocereus,* probably *Echinocereus fereirrae,* also discovered by Gates in 1934. It is a small, gray-spined plant, and has the peculiar habit of throwing roots from each head.

It was indeed with a heavy heart that I had to give the word to saddle for the return journey. I had allotted myself a month for the trip, and it was nearly up. It is my ambition to return again some day, and push even further into the Sierra San Borjas, and into the ranges to the South.

THE ODD CACTUS

EDITOR'S NOTE: Wm. S. Johnson of Pennsylvania sends in a very interesting popular article that appeared with illustrations on a full page of the N. Y. Times Magazine, June 23, 1935. Such articles attract people who later may become students and collectors. More of these articles will be found in magazines throughout the country. The following is quoted from the New York Times and was written by L. H. Robbins:

"The world overseas is sending to America for cactus plants. The Eastern Hemisphere, as if it did not have thorny problems enough on its hands, desires to monkey with nature's foremost buzz-saw. Scientists and economists over there turn speculative eyes toward this weirdest family of the vegetable kingdom. If cacti thrive in the arid parts of the New World, may they not do well in the deserts of the Old? If America has never found much use for them, may not other lands have a try at putting them to work?

Australia did try, and now wishes she had never heard of them. The few plants that she imported years ago found no natural enemies on the island continent to check their spread, and their offspring have become as serious a pest as the jackrabbits. Notwithstanding her bitter experience, the countries of the dry belt that stretches from Morocco eastward to China are asking the University of Arizona for living specimens, and cactus calls come even from Australia's neighbor, New Zealand.

Russia, at the same time, is asking for yuccas, which are not cacti, though they keep company with them in the badlands and are almost as wicked. Russia would make her vast semi-barren steppes region productive of something marketable, and the yucca has a tough and useful leaf fiber, as the Navajo Indians know.

Distributed over America from Alaska to Chile, and particularly prevalent in our Southwest and in Mexico, the strange cactus family tries to be repellant, and succeeds only in being attractive—at least to botanists, empire builders and rock gardeners. The family is large—more than 200 species are native to the United States—and varied. One kind grows seventy feet tall, while another kind stops at an inch. Some take the shape of fluted columns and some that of a barrel. One sort is a sprawl of flat pads, one pretends to be a bush. Others imitate the hedgehog, the cantaloupe, the pin-cushion, and a lowly lump of rock.

They offer the best illustration in the world of the dauntless resolution of species to survive. No one can tell what the first-created cactus looked like when the conditions of its life were favorable. It may have been as graceful and amiable a plant as a Baldwin apple-tree. All that evolutionists are sure of is that hard times set in for its race some eons ago, and the cactus refused to be licked.

As its world dried up, the cactus dispensed with leaves, as being, after all, a luxury, and continued as a stem only. Commonly, it assumed the form that meant the maximum of moisture-holding capacity and the minimum of evaporating surface. It developed a system of ribs, like an umbrella's, or one of lobes or tubercles, like a blackberry's, on which its tough skin could expand or contract without cracking as rainfall increased or decreased. It conserved its moisture by mixing it with a mucilage of its own manufacture. In years of drought it simply reduced itself in size and lived within its budget.

When its desert enemies sought its succulent marrow for food and drink, it learned to put on an armor of needles that made it impregnable to marauding muzzles and paws; or, failing in that in a few instances, it turned poisonous. Thus protected from harm and prepared for the worst, it went on producing wondrous flowers, followed sometimes by delicious fruit, and perpetuated its kind in the earth—"

The Study of Succulents

An Educational Series

By DR. ARTHUR D. HOUGHTON

IV. A TYPICAL PLANT DESCRIPTION

Now we are studying a typical description of a plant.

The following is an exact description taken from Volume II of Britton and Rose, now being reproduced elsewhere in this JOURNAL. This example is a rather simple one although it may not seem so to you until you have learned some botanical language.

33. **Cephalocereus lanuginosus** (Linnaeus) Britton and Rose, Contr. U. S. Nat. Herb. 12: 417. 1909.

Cactus lanuginosus Linnaeus, Sp. Pl. 467. 1753.
Cereus lanuginosus Miller, Gard. Dict. ed. 8. No. 3. 1768, as to name only.
Cereus crenulatus Salm-Dyck, Observ. Bot. 3:6. 1822.
Cereus lanuginosus glaucescens Pfeiffer, Enum. Cact. 80. 1837.
Pilocereus crenulaturs Rümpler in Forster, Handb. Cact. ed. 2. 655. 1885.
Pilocereus lanuginosus Rümpler in Forster, Handb. Cact. ed. 2. 672. 1885.

Often tall and tree-like, either nearly simple or much branched; branches elongated, 9 to 13-ribbed, bright blue, somewhat glaucous; ribs rounded when young, separated by acute intervals; spines acicular, light yellow when young; young areoles all woolly, the flowering ones bearing dense tufts of wool, but this not very long; flowering areoles confined to 2 to 4 ribs on the south side of the plant; flower-buds short, green, rounded at the apex; flowers opening in the early evening, 6 cm. long; outer perianth-segments short, green; inner perianth-segments ovate, white, short; stamens numerous, included; style rigid, white, slightly exserted; stigma-lobes white; fruit depressed, red, naked.

Type locality: Island of Curacao.

Distribution: Curacoa, Aruba, Bonaire.

Cereus crenulatus gracilior Salm-Dyck (Hort. Dyck. 63. 1934) is only a mentioned name.

Illustrations: Loudon, Encyl. Pl. f. 6861, as *Cactus lanuginosus;* Rep. Mo. Bot. Gard. 16:pl. 4, f. 5, as *Cereus lanuginosus;* Hermann, Par. Botavus pl. 115, as *Cereus erectus,* etc; Monatsschr. Kakteenk. 12 : 56, as *Pilocereus lanuginosus.*

Figure 73 is from a photograph taken on Curacao by Mrs. J. N. Rose in 1916.

You will notice that the top line consists of four different parts. The first word "Cephalocereus" is from two Greek words "Cephalo," meaning a head and "cereus" a candle. The second word "lanuginosus" is a word meaning wool, so the name of the plant means a candle with a head on it which is wooly. In the parenthesis you will see the word "Linnaeus," which means that the first man to describe this plant was Linnaeus, the father of modern classification. Beyond the parenthesis we see the quotation "Britton and Rose," which means that Doctors Britton and Rose, the two great modern men of cactaceology, published the present description in CONTRIBUTION TO THE UNITED STATES NATIONAL HERBARIUM, Vol. 12, Page 417, published in 1909.

The heavy type in which the first two words of this line is written indicates the present accepted name of the plant. The figure "33" denotes the consecutive order of the species described this being the 33rd. Below this heavy typed line are six other names with authors, source of publication and dates. These are discarded names called synonyms. They have been discarded in some instances because the plants were not described sufficiently for accurate identification, or because a revision has occurred and plants taken out of a genus, which they formerly were placed in, or for various other reasons. Some plants have as many as 100 synonyms which show the history in naming a particular plant.

Next below this comes a description of the plant in the English language. A group of botanical authorities from all of the countries of the world meets at stated intervals for the purpose of standardizing methods of publication of plants. From now on it is required that the FIRST description be published in Latin, as well as in English. The Latin description is readable to scholars the world over and perhaps reaches

more persons than the English descriptions would, although Latin, like Esperanto and other so called universal languages is becoming less and less necessary as the years go on. At the time Shakespeare wrote, English was the seventh language in the world; today it is leading by over thirty million people its nearest competitor.

We will now make an analytical description of this plant. "Often tall and treelike, either merely simple or much branched"—In this case the "simple" means not branched. "Branches elongated with 9 to 13 ribs, bright blue, somewhat glaucous"—Now the word "glaucous" means having a gray, hoary surface. "Ribs rounded when young, separated by acute intervals; spines acicular"—this latter word means needle shaped, "light yellow when young; young areoles all wooly,"—The word "areole" means an organ from which spines, roots, shoots or flowers may be developed; "the flowering ones bearing dense tufts of wool, but this not very long; flowering areoles confined to 2 or 4 ribs on the south side of the plant"—(a cactus-wise traveller can find his way around without a compass even as the woodsman in the north woods can tell by the moss on the trees); "Flower-buds short, green, rounded at the apex;"—"apex" means top. "flowers opening in the early evening, 6 cm. long;"—this means six centimeters or nearly 3 inches. "outer perianth-segments"—this means the segments around the flower, peri meaning around and anthus meaning flower. "short, green; inner perianth-segments ovate"—egg shaped, "white, short; stamens numerous"—stamens are the male or pollen bearing organ of the flower. "included"—which means that they do not extend beyond the perianth segment. "style rigid"—the column bearing the female organs. "white, slightly exserted;"—protruding beyond the perianth segment. "stigma-lobes"—the top or receptive portion of the pollen receiving style. "white, fruit depressed,"—that is, having a dimple at the upper end. "red, naked."—not bearing spines or wool.

The next line states the "Type Locality." This means the locality from which the plant was obtained upon which this description was based, and which is given as the Island of Curacao. Beneath this is the word "Distribution" which means that it is known to occur in the three places mentioned, and of course, may occur in other places to be recorded by later botanists. The next line, *"Cereus crenulatus gracilior,"* was mentioned by the Duke of Salm-Dyck in the publication pertaining to his own gardens, page 63; 1934, and says it is only a mentioned name(in a more strictly written botanical treatise a name without a description is called a "nomen nudem;" this is to be remembered, as it will frequently occur in your studies). Then follows a list of illustrations which have been published and which were studied by Britton and Rose previous to the publication of this description.

EDITOR'S NOTE: The foregoing will illustrate the need of a botanical vocabulary in order to read an ordinary plant description and to be able to talk intelligently about any certain plant. To satisfy this need Mr. Taylor Marshall is compiling an illustrated "Glossary of botanical terms and pronouncing vocabulary of generic and specific names used in conection with xerophytic plants." To illustrate the completeness of his work, the words beginning with the letter "a" exceed 100 words. This glossary will appear in the March JOURNAL following a general "Description and functions of a plant," that will appear in the February issue. Once these tools are mastered, the study of succulents will assume a greater value as the mass of literature becomes understandable.

The rare cacti shown on page 107 are as follows: UPPER LEFT: *Halisidota agassizi;* cocoon of a moth. Approx. x 3. UPPER RIGHT: *Euchloe sara reakirtii;* butterfly egg approx. x80. LOWER LEFT: *Argynnis macaria;* butterfly egg x40. LOWER RIGHT: *Heodes gorgon;* butterfly egg x40. These photos taken by H. Wm. Menke through the courtesy of Dr. J. A. Comstock of the Dept. of Entomology, Los Angeles Museum.